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U S NAVY RESPONSES TO REGULATOR COMMENTS ON THE DRAFT TECHNICAL
MEMORANDUM SITE REMEDIATION GOAL SELECTION PROCESS AND EVALUATION OF
AREAS OF CONTAMINATED SOIL FOR REMEDIATION AT SITE 1 ALLEGANY BALLISTICS
LABORATORY ROCKET CENTER WV
10/1/2012
U S NAVY

Comments and Navy Responses to the
Draft Technical Memorandum Site Remediation Goal Selection Process
and Evaluation of Areas of Contaminated Soil for Remediation at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

USEPA'S COMMENTS DATED August 17, 2012 on the *Site Remediation Goal Selection Process and Evaluation of Areas of Contaminated Soil for Remediation at Site 1 Technical Memorandum, Allegany Ballistics Laboratory, Rocket Center, West Virginia, March 2012*

Comments submitted by Sarah Kloss, EPA RPM

General Comments

1. EPA concurs with the site specific remediation goals that are contained in this memorandum as long as they are up to date in accordance with comment 3 below. Based on our own analysis of the data, we also concur with the areas that should be targeted for remediation. However, there are concerns related to the field application of the remedial goals. These concerns do not affect the "areas of contaminated soil for remediation" or the "remedial goals." Thus, while the EPA concurs with the memo in the scope of defining remediation areas and remedial goals, it is important to note that concurrence with this memo does not include concurrence with any language that implies agreements as to how the remedial goals will be used in the field if an excavation remedial action is selected. For example the introductory paragraph notes that "this memorandum presents the method for determining how the SRGs will be applied through a comparison of the 95% upper confidence limit (UCL) of site-wide soil concentrations within the active burning grounds (ABG) and outside active burning grounds (OABG)." This language suggests that there is an agreement related to field application of the 95% UCL, which there is not. Concerns with the use of the 95% UCL include: removing sample concentrations from the dataset without replacing them with the concentrations left in place and the use of the calculated UCL in relation to a do-not-exceed value. Again, regardless of our issues with the methodology used in the UCL calculations, our own analysis highlights basically the same areas requiring remediation; thus, there is enough information to proceed with the FS. For further details about the issues with the way the UCL is being used, we suggest a meeting with EPA technical support.

Navy Response: The SRGs have been updated to incorporate changes in toxicity criteria, drinking water standards and/or risk methodology as presented in the spring 2012 RSL table. See general comment #3 for details.

It was not the Navy's intention for the technical memorandum to address how the post remedial action confirmation sampling would be interpreted or how the remedial goals will be used in the field if an excavation remedial action is selected. The Introduction section has been revised to state,

"This technical memorandum presents the proposed site remediation goals (SRGs) and method for applying a 95% upper confidence limit (UCL) of site-wide soil concentrations within the active burning grounds (ABG) and outside active burning grounds (OABG) to determine areas of concern (AOCs) that will be targeted for remediation in Operable Unit 4 (OU-4), Site 1 soil, at Allegany Ballistics Laboratory (ABL) located in Rocket Center, West Virginia. The human health and ecological preliminary remediation goals (PRGs) and site-specific soil-

to-groundwater leaching considerations discussed herein supersede previous partnering team discussions and decisions regarding Site 1 SRGs.

The Navy, in partnership with West Virginia Department of Environmental Protection (WVDEP) and the US Environmental Protection Agency (EPA), will utilize the AOCs presented in this memo to define the general areas of concern in soil for use as part of the remedial alternative development and comparison in the Feasibility Study (FS). This technical memorandum does not address how the post remedial action confirmation sampling will be interpreted or how the remedial goals will be used in the field if an excavation alternative is selected as the final remedy. Furthermore, additional data collection efforts may be necessary to refine remedial target areas presented in this memo prior to selection of the final remedy which will be presented in the Record of Decision (ROD) in accordance with the Navy's Environmental Restoration Program, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidance (EPA, 1999), the National Oil and Hazardous Substance Pollution Contingency Plan (Title 40 Code of Federal Regulations Part 300 et seq.), and other relevant EPA guidance."

Concerns regarding the methods used to conduct the 95% UCL were discussed on the August 15, 2012 conference call with technical support staff from EPA, NAVFAC, and CH2MHILL. The team agreed that although there are multiple ways to run the 95% UCL to determine the focused remediation areas, the outcome remains the same as stated in EPA's general comment #1. Therefore changes to the use of the 95% UCL are not recommended at this time.

2. Ecological Risk: Tables 9 through 14 present the results of the iterative removal of contaminated soil locations under various human exposure scenarios. The memo indicates that each of these scenarios included evaluation using ecological remedial goals. This information may be included in the color-coding of the tables, yet no legend is provided to demonstrate which areas require removal for protection of ecological protection. The BTAG requests that a legend be provided to reviewers to enable tracking of the remedial goal driving the selection of soil areas for removal to meet the 95% UCL objective. Figures indicating areas requiring remediation by exposure scenario (e.g., human industrial, ecological) would also clarify factors defining areas of remediation.

Navy Response: Although the removal scenarios evaluated are labeled "industrial" or "residential", they are not human exposure scenarios per se. The SRGs used to define the potential removal areas are the lower of the human health PRGs, the ecological PRGs, and the groundwater SSLs, plus a consideration of facility-specific or site-specific background data and site-specific groundwater concentration data, as summarized in Tables 7 and 8. The "industrial" versus "residential" designation simply refers to which of the human health-based PRGs (residential or industrial) was used in the SRG derivation for that scenario. As shown on Table 7, for the ABG, the selected SRG for five of the 11 final COCs (3 explosives and 2 metals) was based upon the ecological PRG (the other 6 were based upon one of the other PRGs since they were lower than the ecological PRG for those constituents). As shown on Table 8, for the OABG, the selected SRG for 14 of the 26 final COCs (for the industrial scenario) was based upon the ecological PRG. The color coding in Tables 9 through 14

does not relate to the PRG used to define the SRG; a legend describing the color coding has been added to Tables 9 through 14.

The potential removal areas identified were derived considering all three exposure/risk categories (human health, ecological, and leaching to groundwater), and background, simultaneously, as is appropriate for an evaluation to support the FS. Because the SRGs are not used as not-to-exceed values in the UCL scenarios, it would be very difficult to identify removal areas based on each of the individual PRGs since the removal of samples in the first steps of the analysis (which may be driven by a COC whose SRG is based upon a non-ecological PRG) impacts what samples are removed in later steps (and thus the ultimate removal area) Therefore, no modifications or additional figures are recommended.

3. The PRGs and SSLs should be updated based on changes in toxicity criteria, drinking water standards and/or risk methodology as presented in the current spring 2012 RSL table.

Navy Response: The PRGs and SSLs have been updated based on the changes in toxicity criteria, drinking water standards and/or risk methodology as presented in the current spring 2012 RSL table. In addition, the arsenic background concentration previously reported was incorrect. The arsenic background was revised and reevaluated during the revision process. The ABG COCs that have been affected:

- **Human health PRG – 2,3,7,8-TCDD for residential scenario**
- **SSL – 2-nitroaniline, 1,3,5-trinitrobenzene, HMX, nitroglycerin, cobalt, iron, manganese, and vanadium**
- **SRG – arsenic for residential scenario, and manganese for residential and industrial scenario**

The OABG COCs that have been affected:

- **Human health PRG – PCE for residential and industrial scenarios, 2,3,7,8-TCDD for residential scenario, and manganese for residential and industrial scenarios**
- **SSL - Bromodichloromethane, methyl acetate, HMX, nitroglycerin, cobalt, iron, manganese, nickel, silver, vanadium, and zinc**
- **SRG – arsenic for residential scenario, bromodichloromethane for residential and industrial scenarios, nitroglycerin for residential and industrial scenario, subsurface cobalt for residential and industrial scenarios, and iron for industrial scenario. In addition, there was a typo for the industrial SRG for benzo(b)fluoranthene, which has been corrected.**

Tables 3 and 5 through 14 have been revised to reflect the changes.

Specific Comments

1. The Site Specific Soil Screening Levels discussion should explain (in the narrative) the input parameters that were used to calculate the dilution attenuation factor (DAF) and what this input to the SSL equation represents.

Navy Response: The DAF equation " $DAF = 1 + \frac{K_{id}}{IL}$ " has been added to the

Procedure for Calculating SSLs section to explain the input parameters that were used to calculate the DAF. All input parameters for the DAF are already included in Table 3. The fourth, fifth, and sixth sentence in the section have been revised to state, "Typically, lateral groundwater flux within the underlying aquifer is much greater than the vertical recharge and a dilution attenuation factor (DAF) has been used in calculating the SSL. The groundwater protection standard (C_w) is the product of the potable groundwater standard (MCL or RSL) and the DAF. The C_w term in the diluted standard. The input parameters to the SSL equilibrium equation and DAF equation are listed in Table 3."

2. The Perchlorate SSL discussion includes a final paragraph that mentions DAFs. Table 4 also includes DAFs for perchlorate calculation. It's unclear how the DAF was used in the given formula. Further, it's unclear how the exposure duration input parameter was calculated.

Navy Response: The DAF is used in the perchlorate approach (mass limited SSL) in the same manner as used for the other parameters (infinite mass) as discussed in specific comment 1. The exposure duration parameter is not calculated, but provided by EPA in the guidance documents as 70 years.

WVDEP'S COMMENTS DATED August 9, 2012 on the *Site Remediation Goal Selection Process and Evaluation of Areas of Contaminated Soil for Remediation at Site 1 Technical Memorandum, Allegany Ballistics Laboratory, Rocket Center, West Virginia, March 2012*

Comments submitted by Thomas Bass, WVDEP RPM

General Comments:

1. The approach outlined in the document identified above, attempts to provide a statistical approach to delineate the aerial extent of contamination for future remediation. This process is based on the ranges of contaminant concentrations reported for samples obtained throughout the 2 identified areas (ABG and OABG) and focuses on the highest values. While the approach appears to identify likely source areas, there is considerable uncertainty regarding the lateral and vertical extents of contamination. Unfortunately this uncertainty is exacerbated by defining areas of contamination on the basis of contaminant levels without consideration of the spatial relationships between samples identified as "contaminated".

Navy Response: It is agreed that there is some uncertainty in the lateral and vertical extents of the areas of concern to be targeted for remediation. In an effort to eliminate the uncertainties, a pre-design study will be conducted to refine the areas of concern and bound the lateral and vertical limits of excavation. During the August 2012 partnering meeting, given the site understanding and low potential for the areas of concern to significantly increase/decrease, the Team agreed that the pre-design study is not necessary to select a remedy, and prepare the proposed remedial action plan and record of decision. However, the results will be used to support future Team decisions and refine the design once the final remedy is selected.

The Introduction section has been revised to state,

"This technical memorandum presents the proposed site remediation goals (SRGs) and method for applying a 95% upper confidence limit (UCL) of site-wide soil concentrations within the active burning grounds (ABG) and outside active burning grounds (OABG) to determine areas of concern (AOCs) that will be targeted for remediation in Operable Unit 4 (OU-4), Site 1 soil, at Allegany Ballistics Laboratory (ABL) located in Rocket Center, West Virginia. The human health and ecological preliminary remediation goals (PRGs) and site-specific soil-to-groundwater leaching considerations discussed herein supersede previous partnering team discussions and decisions regarding Site 1 SRGs.

The Navy, in partnership with WVDEP and the EPA, will utilize the AOCs presented in this memo to define the general areas of concern in soil for use as part of the remedial alternative development and comparison in the Feasibility Study (FS). This technical memorandum does not address how the post remedial action confirmation sampling will be interpreted or how the remedial goals will be used in the field if an excavation alternative is selected as the final remedy. Furthermore, additional data collection efforts may be necessary to refine remedial target areas presented in this memo prior to selection of the final remedy which will be presented in the Record of Decision (ROD) in accordance with the

Navy's Environmental Restoration Program, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidance (EPA, 1999), the National Oil and Hazardous Substance Pollution Contingency Plan (Title 40 Code of Federal Regulations Part 300 et seq.), and other relevant EPA guidance."

2. A primary objective of the future remedial action should conform to the requirements of §47 CSR 12.3.2.b.

Where the concentration of a certain constituent exceeds an otherwise applicable groundwater quality standard due to human-induced contamination, no further contamination by that constituent shall be allowed and every reasonable effort shall be made to identify, remove or mitigate the source of such contamination and to strive, where practical, to reduce the level of contamination over time to support drinking water use.

Given this requirement, as well as the issue identified above, WVDEP cannot support deviating from the calculated remedial target concentrations as currently approved.

Navy Response: Compliance with the referenced statute is established by the inclusion of 47 CSR 57-4.1 as an ARAR in the forthcoming revised draft FS.